

MAP 4 C  
Chapter 3 and 4 Test Review  
Friday Mar 31st

Students to review Key Details of Statistical Analysis and Use in the Media

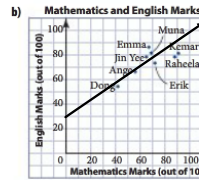
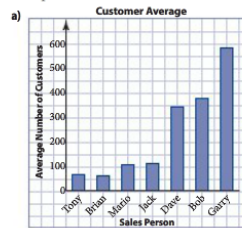
Chapter 3 Review p. 190-191  
ques. 1-7 9, 11-13  
Chapter Test  
p. 192-193  
q. 1-8

Chapter 4 Review  
p. 256-257  
q. 1-9  
Practice Test  
p. 258-259  
q. 1-7.

Mar 26-7:38 AM

### 3.1 Two-Variable Data Sets, pages 142-151

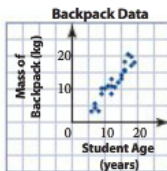
1. Indicate how many facts you know about each person and list the facts.



— describe the rel'n  
— # of pts on each side  
— distance b/n points and line  
**PREDICTIONS**  
interpolate  
extrapolate

Mar 26-9:29 AM

2. A health researcher recorded students' ages and the masses of their backpacks, and displayed the data in a scatter plot.



- Explain why a scatter plot was used to display the data.
- What do you know about each person?
- Pose a question that would require two-variable data analysis.

Mar 26-9:30 AM

### 3.2 Effective Surveys, pages 152-159

3. Identify which principles of surveying are not being followed in each example.

- A survey question asked, "Are you in favour of reducing access to the harmful effects of tobacco?"
- A statement in small print at the end of a survey indicated that information from the survey would be shared with other corporate divisions in the company.
- A survey question asked, "What is the level of your mother's education?"  
Elementary ☐ Some High School ☐  
High School ☐ Some Post-Secondary ☐  
College ☐ University ☐

4. Give an example of each survey question type below that would relate to a snack food.

- Dichotomous
- Multiple Choice
- Rating Scale
- Completion
- Open-ended

Mar 26-9:30 AM

5. The owners of a shopping mall intend to conduct a short survey of people who visit the mall to find out their level of satisfaction with the mall's services. Write two five-question surveys for the mall, one following the principles of surveying and the other breaking the rules.

### 3.3 Collect and Organize Data, pages 160-167

6. Identify the type of data in each situation. Explain your choice.

- An athletic wear manufacturer tests a new swimsuit design on competitive swimmers.

Mar 26-9:31 AM

- A transit authority compiles data on the number of riders and the daily high temperature.
- A student who was researching the impact of oil prices on the Canadian economy downloaded data from government Web sites.

7. Set up a data recording sheet for an experiment that involves measuring the concentration of a medication in the bloodstream after each hour for 4 h. Then, an additional dose is given and the concentration is measured each hour for an additional 8 h.

8. How does the change in the size of a major city relate to median family income? Research the 2006 Canadian census in the E-STAT Web site to answer this question. Download the appropriate data, present it in a summary table, and make a scatter plot.

Mar 26-9:31 AM

**3.4 The Line of Best Fit, pages 168-179**

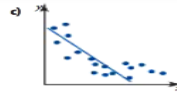
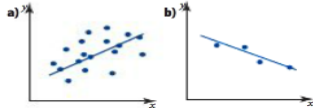
9. Make a scatter plot associated with each correlation coefficient.

- a)  $r = 0.95$    b)  $r = -0.14$    c)  $r = 0$

10. Determine an equation for the line of best fit of the data in question 8. Classify the correlation and state whether the line of best fit is appropriate.

**3.5 Analysis and Conclusions, pages 182-189**

11. Describe the error in regression for each situation.



12. Describe each cause and effect relationship or identify another factor that would affect both variables.

- a) An analysis of the scores of professional golfers found a correlation between the final score and the number of putts.  
 b) There is a strong correlation between a person's height and the length of their foot.  
 c) A study found that as the mass of a car increases the fuel efficiency decreases.  
 d) Ethanol must now be mixed with gasoline to make car fuel. Most ethanol is made from corn, so the price of food increases as the demand for gasoline increases.

Mar 26-9:31 AM

Mar 26-9:32 AM

13. Compact fluorescent light (CFL) bulbs can be used to replace incandescent (standard) bulbs, and use much less energy to produce the same amount of light. A manufacturer's Web site provided the following conversion table for equivalent light output.

CFL (W)	Incandescent (W)
5	20
10	40
15	60
20	75
28	100
40	150

Perform regression analysis to determine the strength of the relationship and the equation of the line of best fit. Discuss whether a cause and effect relationship exists.

**4.1 Statistical Measures, pages 200-211**

1. a) A doughnut chain has 2200 stores across Canada. Canada has a population of 34 000 000. How many stores are there per capita?

$$2200 / 34\,000\,000$$

b) There are more of these stores per capita (0.0002) in Moncton, NB, than in any other Canadian city. Moncton has a population of 117 000. How many stores are in Moncton?

$$0.0002 = \frac{x}{117\,000}$$

2. The table shows the population of four cities in 2001 and 2006. Rank the cities by their percent change in population.

City	Population, 2001	Population, 2006
Stratford	29 780	30 461
Chatham-Kent	107 341	108 177
Vaughan	182 022	238 866
Northern Bruce Peninsula	3 599	3 850

$$\frac{30\,461 - 29\,780}{29\,780} \times 100 = 2.3\%$$

Mar 26-9:32 AM

Mar 26-9:33 AM

3. The marks, out of 100, on a biology test are shown. Determine the percentile rank of each student.

- a) Jermaine   b) Elisa   c) Candace

Student	Mark	Student	Mark
Annika	67	Shaniqua	79
Zac	82	Candace	90
Brian	61	Vincent	68
Elly	44	Jermaine	84
Curtis	79	Alice	88
Jill	67	Katie	75
Elisa	63	Keegan	69
Andrew	63	Wyatt	84
Jon	32	Frank	62
Mary	51	Eileen	80

$$P = \frac{L + 0.5(E)}{n}$$

$$= \frac{16 + 0.5(2)}{20}$$

$$= \frac{17}{20} = 85\% \text{ile}$$

4. The final marks for a geography class are determined using these weights: tests 35%, assignments 15%, essay 20%, and exam 30%. Determine the final mark for each student.

Student	Tests (out of 200)	Assignments (out of 75)	Essay (out of 50)	Exam (out of 80)
John	218	65	40	69
Steg	234	43	31	36
Mohammed	287	72	48	78

**4.2 Statistical Indices, pages 214-225**

5. The table shows the Consumer Confidence Index (CCI), which is a measure of people's confidence in how well the economy is performing.

Month, Year	CCI	Month, Year	CCI
Nov. 04	101.5	Dec. 05	99.7
Dec. 04	103.1	Jan. 06	103.3
Jan. 05	101.4	Feb. 06	105.5
Feb. 05	102.1	Mar. 06	104.9
Mar. 05	103.1	Apr. 06	104.6
Apr. 05	100.7	May 06	103.9
May 05	100.1	Jun. 06	104.0
Jun. 05	100.0	Jul. 06	106.1
Jul. 05	101.5	Aug. 06	107.2
Aug. 05	106.0	Sept. 06	103.6
Sept. 05	104.5	Oct. 06	104.9
Oct. 05	97.6	Nov. 06	103.5
Nov. 05	101.0	Dec. 06	105.3

- a) Describe the level of confidence in September 2006 compared to May 2006.  
 b) What is the general trend in the confidence level of Canadians?

Mar 26-9:33 AM

Mar 26-9:34 AM

## 4.2 Statistical Indices, pages 214–225

5. The table shows the Consumer Confidence Index (CCI), which is a measure of people's confidence in how well the economy is performing.

Month, Year	CCI	Month, Year	CCI
Nov. 04	101.5	Dec. 05	99.7
Dec. 04	103.1	Jan. 06	103.3
Jan. 05	101.4	Feb. 06	105.5
Feb. 05	102.1	Mar. 06	104.9
Mar. 05	103.1	Apr. 06	104.6
Apr. 05	100.7	May 06	103.9
May 05	100.1	Jun. 06	104.0
Jun. 05	100.0	Jul. 06	106.1
Jul. 05	101.5	Aug. 06	107.2
Aug. 05	106.0	Sept. 06	103.6
Sept. 05	104.5	Oct. 06	104.9
Oct. 05	97.6	Nov. 06	103.5
Nov. 05	101.0	Dec. 06	105.3

$$y = 2ax_1 + b$$

a

b

$$R =$$

- Describe the level of confidence in September 2006 compared to May 2006.
- What is the general trend in the confidence level of Canadians?
- By what factor has the index changed from the start of the table to the end?
- What was the percent change in consumer confidence from July 2005 to September 2006?

Mar 26-9:34 AM

6. In August 2008, the CPI (2002 = 100) for Ontario was 114.8 and for Toronto was 110.7.

- By what factor did the CPI increase in Ontario since 2002?
- By what factor did the CPI increase in Toronto since 2002?
- By what factor is it less expensive to live in Toronto than the rest of the province in 2008?

Mar 26-9:34 AM

## 4.3 Interpret Statistics in the Media, pages 226–235

7. "4 out of 5 dentists surveyed recommend DentExtreme for their patients who chew gum." Write three questions that could be used to challenge this claim.

8. The graph shows the number of youth court cases in Canada annually from 1991/1992 to 2006/2007.



Source: Statistics Canada, CANSIM table 252-0047

- What does the graph imply?
- How could you change the graph to more accurately display the data?
- Write two newspaper headlines that give opposing views of the situation.

Mar 26-9:35 AM

- What additional information is needed to determine actual youth crime rates?

## 4.4 Statistical Bias, pages 236–243

9. Identify and classify the bias in each situation. Suggest how to eliminate the bias.

- A surveyor asks: "Should the government be re-elected so it can continue rebuilding our economy and creating more jobs?"
- A teacher selected 15 students in a school cafeteria to fill out a survey.
- In a national survey on poverty among immigrant families, it was found that most ethnic groups were appropriately represented but those from non-English speaking countries responded at a significantly lower rate.
- During quality control testing of 750-g cereal boxes, it was found that most were less than 745 g. The scale was checked and found to be off-balance.
- A radio station host carried out a call-in survey and stated that 76% of listeners support smaller fines for traffic violations.

Mar 26-9:35 AM

## 4.5 Critical Analysis, pages 244–255

10. Identify each example as descriptive or inferential statistics. Explain your choice.

- Studies show that 12.7% of Canadians over the age of 65 have diabetes.
- In a recent survey, 68.4% of respondents said they watch television every day.
- An experiment involved 25 people. They were given a visual stimulus and 73% had a reaction time of more than 1.4 s.

Mar 26-9:35 AM